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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/890,690	09/26/2001	Daniel Suttor		6757

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EXAMINER

MICHENER, JENNIFER KOLB

ART UNIT	PAPER NUMBER
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1762

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DATE MAILED: 06/27/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/890,690

Applicant(s)

SUTTOR ET AL.

Examiner

Jennifer Kolb Michener

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 September 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5, 7.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 3-7, 9 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 4 requires the use of Pr, Er, Fe, Co, Ni, or Cu in the solutions. This claim depends on claim 3 requiring that the solutions contain at least one of the ions or complexes of the "rare earth elements or subgroups". It is not clear whether claim 4 is intended to further limit claim 3. Since the specification does not disclose the use of solutions containing *both* rare earth elements and additional elements, Examiner has concluded that Applicant intended claim 4 to further limit claim 3 as to the type of rare earth elements to be used in solution. However, not all of the chemicals of claim 4 are "rare earth elements". For example, rare earth elements include metals 57-72, such as Pr and Er of claim 4, but do not include Fe, Co, Ni, or Cu. Therefore if claim 4 is intended to further limit claim 3, some of the elements of claim 4 contradict the requirements of claim 3. Upon reviewing the specification, Examiner notes that the solutions are said to contain complexes "of the rare earths or the 2nd or 8th subgroups, in particular Pr, Er, Fe, Co, Ni, Cu." (page 3, line 18). Perhaps this was the language

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intended for claim 3. Claim 3 as written is limited to rare earth elements or subgroups of *rare earth elements*.

There is no antecedent basis for the salts required by claim 5. Claim 5 depends on claim 3 which depends on either claim 1 or claim 2. None of claims 1-3 contain any reference to salts. While the requirement for a salt in claim 5 would be clear if the salt were used *in addition to* the metals in solution, review of the specification (page 3) reveals that the only salt used in Applicant's method is a salt of the rare earth metal or subgroup of claim 3. Claim 5 would be clearer if written to require the rare earth metal complex to be a salt.

Additionally claim 5 requires a process "according to claim 3, characterized in that chlorides, acetates or alcohols as well oxo complexes are used as salts". It is not clear whether Applicant is requiring the use of one or a plurality of salts in this claim. If Applicant intends one to select a salt from the group consisting of chlorides, acetates, alcohols, and oxo complexes (as the specification appears to indicate), Examiner suggests the use of Markush language. Otherwise, the claim can be interpreted to require the use of chlorides and either acetates or alcohols and oxo complexes, for a total of three salts in one solution.

There is no antecedent basis for "dental ceramics" used in claims 6-7. Furthermore the limitation of claim 6 requiring that the "dental ceramics are used in the pre-sintered state" is unclear. It is not clear how an unsintered ceramic can be used as

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a dental prosthetic. Does Applicant intend to claim that the ceramic is *colored* in the pre-sintered state instead of *used*?

Claims 9 and 12 are indefinite for containing a broad range or limitation together with a narrow one. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 9 recites the broad recitation "a matter of hours", and the claim also recites "in particular under two hours, quite particularly under 1 hour and particularly preferable under 20 minutes" which is the narrower statement of the range/limitation. Additionally, claim 12 recites diameters and heights and then a more preferable diameter and height. The two diameters and heights do not overlap and are thus in direct contradiction to one another.

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Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-8, 10-11, and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Sadoun et al.

In regard to claims 1-2, Sadoun et al. teach forming a ceramic dental product and coloring by metal oxides or salts in solution (abstract; col. 1, lines 54-55; col. 2, line 34).

The ceramic is translucent (col. 1, line 55) and ceramics are inherently porous.

In regard to claims 3-5, Sadoun teaches the use of iron, nickel, or yttrium salts (col. 2, lines 40 and 45), which inherently meet the limitation of claim 3 on which claim 4 depends. The salts may be acetates, as taught in Example 2.

In regard to claim 6, Sadoun teaches sintering after coloring (col. 4, line 36).

In regard to claim 7, Sadoun teaches zirconium oxide as the dental ceramic (col. 4, line 22).

The solution of the metal salt is water-based (col. 2, line 33).

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One exemplary concentration of metal salt used is 0.03%, lying within the range required by Applicant in claim 10.

The ceramic of Sadoun is in solution with the metal salt, which would qualify as "immersion" of the ceramic into the solution as required by claim 11 (see Examples).

In regard to claim 13, the ceramics of Sadoun have metal colorants throughout due to the solution containing both ceramic and colorant.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 9, 12, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sadoun.

Sadoun teaches that which is disclosed above. Sadoun fails to teach the "action time" of the metal solutions and diameters of the ceramics.

It is Examiner's position that the amount of time the ceramic is subjected to the metal solution would qualify as "action time" and that such a time would have been determined by one of ordinary skill based on the shade of color desired to impart on the

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ceramic. Additionally, the diameter of ceramic would be dependent upon the desired final product and would also have been determined by an ordinary artisan to achieve his desired final product. It would have been obvious to one having ordinary skill in the art to have determined the optimum value of a cause effective variable such as this through routine experimentation in the absence of a showing of criticality in the claimed variable.

In re Woodruff, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

In regard to the kit of claim 14 requiring a stock bottle for the metal and a receptacle for coloring, it is Examiner's position that one of ordinary skill in the art would have necessarily required a holding container for the metal solutions prior to use and a receptacle or immersion tank for the coloring process. It would have been obvious to one of ordinary skill in the art to use a "bottle" for the metal solution container. Additionally, an immersion tank meets the requirement of "receptacle". Therefore, in order to practice the method of claim 1, one of ordinary skill in the art would gather his supplies to include at least the contents of the kit of claim 14.

7. Claims 1-6 and 8-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hechler in view of Sadoun.

Hechler teaches coloring ceramic dental substrates with aqueous metal oxide sols (col. 2, lines 1, 19, 30; col. 4, line 4). Ceramics are inherently porous.

Hechler does not disclose that the ceramic dental substrates are "translucent", as required by Applicant.

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Sadoun teaches that which is disclosed above, specifically that zirconium oxide ceramic has excellent qualities for use in dental prosthetics because its color and translucency correspond to the color and translucency of real teeth (col. 1, line 40).

Since Hechler teaches a method of treating dental ceramics and Sadoun teaches the use of zirconium oxide as a dental ceramic in order to match the natural translucency of teeth, Sadoun would have reasonably suggested using the translucent zirconium oxide ceramic in the method of Hechler. It would have been obvious to one of ordinary skill in the art to use the teachings of Sadoun in the method of Hechler to provide Hechler with a suitable ceramic for his method that is also translucent to yield an aesthetically pleasing dental prosthetic.

In regard to claim 2, Hechler teaches that the ceramic substrate may be a dental prosthesis (col. 2, line 30), as outlined above.

In regard to claim 6, the ceramics appear to be in the pre-sintered state as the substrates are fired at up to 1000 °C *after* they are coated (col. 6, line 15).

In regard to claims 3-5 and 8, Hechler teaches the use of cobalt, iron, and nickel as the colored metal salts in solution (col. 3, line 49 and col. 4, lines 10-11). The metal may be supplied in the form of a salt of chloride (col. 4, line 25) in water (col. 2, line 57).

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In regard to claims 9 and 12, Hechler fails to teach the "action time" of the metal solutions and diameters of the ceramics.

It is Examiner's position that the amount of time the ceramic is subjected to the metal solution would qualify as "action time" and that such a time would have been determined by one of ordinary skill based on the shade of color desired to impart on the ceramic. Additionally, the diameter of ceramic would be dependent upon the desired final product and would also have been determined by an ordinary artisan to achieve his desired final product. It would have been obvious to one having ordinary skill in the art to have determined the optimum value of a cause effective variable such as this through routine experimentation in the absence of a showing of criticality in the claimed variable. *In re Woodruff*, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

In Example 1, the metal is supplied in a 4% solution, falling within the range claimed by Applicant in claim 10.

In regard to claim 11, Hechler teaches spraying or immersing the ceramic substrate into the metal salt solution (col. 4, lines 38 and 50).

In regard to claim 13, Hechler teaches that the metal salt gives the ceramic a surface color and a body color (col. 4, line 6). Imparting a "body color" appears to give a "through-color" as required by Applicant. Additionally, Examiner notes that the art does

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not recognize a distinction between coating and impregnating. *In re Marra et al.*, 141 USPQ 221.

In regard to the kit of claim 14 requiring a stock bottle for the metal, a receptacle for coloring, and optionally a screen, it is Examiner's position that one of ordinary skill in the art would have necessarily required a holding container for the metal solutions and a receptacle or immersion tank for the coloring process. It would have been obvious to one of ordinary skill in the art to use a "bottle" for the metal solution container.

Additionally, an immersion tank meets the requirement of "receptacle". Hechler further teaches screen-printing in the method of his invention, thus requiring a screen (col. 4, line 55). Therefore, in order to practice the method of claim 1, one of ordinary skill in the art would gather his supplies to include at least the contents of the kit of claim 14.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Oden et al. is cited for teaching metal oxides for coloring pre-sintered ceramics. Nakabayashi et al. is cited for teaching color treatment of dental porcelain with metal salts (such as ferric chloride) in solution (abstract; col. 1, col. 5, lines 28-40; col. 11, lines 5-10).

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer Kolb Michener whose telephone number is 703-

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306-5462. The Examiner can normally be reached on Monday through Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive P. Beck can be reached on 703-308-2333. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



Jennifer Kolb Michener
June 25, 2002



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